

Vibro Meter Vibro Meter Series Service Manual

444-311-000-023

1. Description

444-311-000-023

3. Product Information

444-311-000-023

Vibro Meter CE311 piezoelectric

accelerometer

KEY FEATURES AND BENEFITS

From the vibro-meter® product line

Sensitivity: 50 μ A/g

Frequency response: 2 to 8000 Hz

Temperature range: -40 to 125°C

Long-distance signal transmission

Integrated electronics

Integral case insulation

Available in standard versions and

Ex versions certified for use in potentially

explosive atmospheres

APPLICATIONS

Vibration monitoring in harsh industrial

environments and/or hazardous areas

DESCRIPTION

The CE311 piezoelectric accelerometer from

Meggitt's vibro-meter® product line is a vibration

sensor designed for the monitoring and

protection of machinery in harsh industrial

environments and/or hazardous areas.

The CE311 sensor features a symmetrical shearmode measuring element using polycrystalline

material. The sensor uses integrated electronics to

provide the required signal processing,

eliminating the need for an external signal

conditioner (charge amplifier). The electronics

also performs charge-to-current conversion in

order to provide a current-modulated output

signal that is suitable for transmission over long

distances.

The CE311 is fitted with an integral cable (twisted

pair, shielded) in a hermetically sealed link,

protected by a flexible, leak-tight protection tube

(stainless-steel hose). More specifically, the sensor

and protection tube are hermetically welded to

one another, resulting in a system that is fully

protected against cooling fluids, lubricants, water,

steam and other potential contaminants. This

makes the CE311 an extremely reliable device

suitable for the long-term monitoring of vibration

in many industrial applications.

General

Input power supply requirements : 15 to 28 VDC, with a bias (standby) current of 5.5 to 7.5 mA

Signal transmission : Current-modulated output (2-wire system)

Signal processing

Internal : Integrated electronics (charge-to-current conversion)

External : Galvanic separation unit and/or monitoring system electronics

Operating

(At 23°C $\pm$ 5°C, 73°F $\pm$ 9°F)

Sensitivity : 50 μ A/g $\pm$ 5%

Dynamic measurement range : 0.004 to 40 gpeak

Overload capacity (spikes) : Up to 100 gpeak

Linearity : $\pm$ 1% over dynamic measurement range

Transverse sensitivity : < 3% (measured at 15 Hz with 5 g)

Resonant frequency (mounted) : 20 kHz typ.

Frequency response : -3 dB at 2 Hz.

< $\pm$ 5% between 6 and 5000 Hz.

$<\pm 10\%$ between 5000 and 8000 Hz.

Capacitance (nominal)

Pole to pole : 10.5 nF for sensor + 105 pF/m of cable

Pole to casing : 20.0 pF for sensor + 200 pF/m of cable

Environmental

Temperature range

Continuous operation : -40 to 125°C (-40 to 257°F)

Short-term survival (15 minutes max.) : -55 to 150°C (-67 to 302°F)

Temperature sensitivity error

with respect to 23°C (73°F)

: $\pm 5\%$ between -40 and 125°C (-40 to 257°F)

Shock acceleration : 500 gpeak (half-sine wave, 1 ms duration)

Corrosion, humidity

Sensor : Stainless steel (1.4441), hermetically welded

Protection tube : Stainless steel (1.4541), hermetically welded

Note: The sensor and protection tube are hermetically welded to one another to create a leak-tight assembly that is impervious to 100% relative humidity, water, steam or oil, sea-salt atmospheres and other potential contaminants such as dust, fungus and sand.

Base strain sensitivity : 0.0015 g/ $\mu\epsilon$ typ.

Calibration

Dynamic calibration at factory at 120 Hz and 5 gpeak (23°C , 73°F). No subsequent calibration necessary.

Mechanical

Dimensions : See Mechanical drawings on page 5

Connection : Flying leads

Weight

Sensor : 245 g (0.54 lb) approx.

Cable/flexible stainless-steel hose

(protection tube)

: 135 g/m (0.091 lb/ft) approx.

Mounting : Four M6 $\times$ 35 Allen bolts (hexagonal socket head), 12.9 steel, according to DIN 912 (ISO 4762) with four M6 spring-steel washers, according to DIN 7980.

Mounting torque of 15 Nm (11.1 lb-ft).

ORDERING INFORMATION

To order please specify

Type

CE311

Designation

Different versions of the piezoelectric accelerometer: – Standard version with 6 m integral cable

Part number (PNR): 444-311-000-023